

MQ200-A1,5-244.266-B

AO MODULATOR/SHIFTER/PULSE PICKER 244-266 nm

Product Overview

These modulators have been specially designed for applications for which TeO₂ cannot be used. They are made of fused silica UV grade with Brewster incidence. They operate between 244 and 266nm.

Applications are Amplitude modulation, Pulse Picking or fixed Frequency shifter 200MHz.

Features

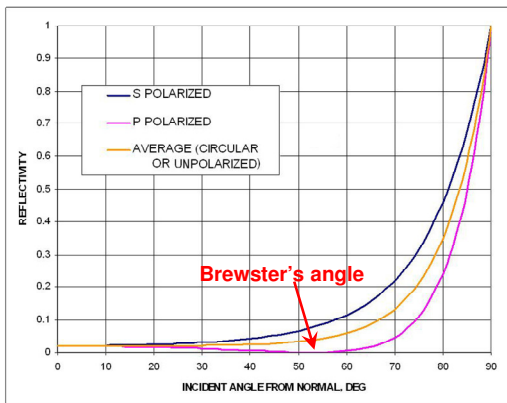
- High laser power
- Linear polarization
- High diffraction efficiency

Brewster incidence

It is the angle of incidence at which light with a particular polarization is perfectly transmitted through the transparent surface, with no reflection.



Access to your operating manual



Technical Specifications

| Parameter | Specification |
|---|--|
| Material-Acoustic mode-Velocity | Fused silica [L] - 5960 m/s |
| Optical Wavelength range | 244 to 266 nm |
| Optical Transmission | Brewster incidence |
| Input / Output Polarization | Linear parallel / Linear parallel |
| Active Aperture | 1.5 x 2 mm ² |
| Carrier Frequency / Frequency shift | +/- 200 MHz |
| Separation Angle (0-1) | > 8 mrd |
| Static Extinction Ratio | Nom 30 dB |
| Rise / Fall time | 110 ns / mm, min 35 ns |
| Diffraction Efficiency | 85 % with beam diameter ≥ 0.35 mm, TEM00 laser beam |
| Analog Amplitude modulation bandwidth (-3 dB) | Max 13 |
| Max optical power density | > 5 W/mm ² |
| Input impedance | Nom 50 Ω |
| V.S.W.R. | Nom < 1.2/1 |
| RF Power / Connector | ≤ 4 W / SMA |
| Size / Weight | (LxHxh) 59.1 x 33.6 x 42.4 mm ³ / 60 g IN PRO 082 |
| Operating Temperature | +10 to +40 Non condensing |
| Storage Temperature | -40 to +50 Non condensing |

Options / On request

- VARIABLE FREQUENCY SHIFT 200 +/- 15 MHz
 ACTIVE APERTURE 2.5 x 2.5 mm²

Rise Time (Tr) is beam diameter (Φ) sensitive:

$$Tr = 0.66 \frac{\Phi}{V}$$

Amplitude modulation bandwidth (F_{-3dB}) is rise time (Tr) sensitive:

$$F_{-3dB} = \frac{0.48}{Tr}$$

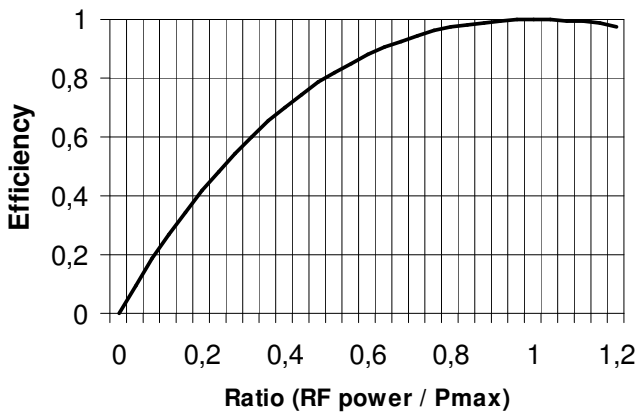
Separation angle (Δθ) is wavelength (λ) sensitive:

$$\Delta\theta = \frac{\lambda F}{V}$$

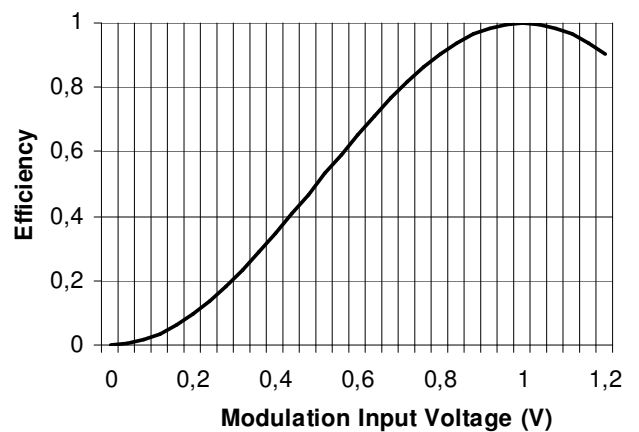
RF power (P) is wavelength (λ) sensitive:

$$\frac{P_1}{P_2} = \frac{\lambda_1^2}{\lambda_2^2}$$

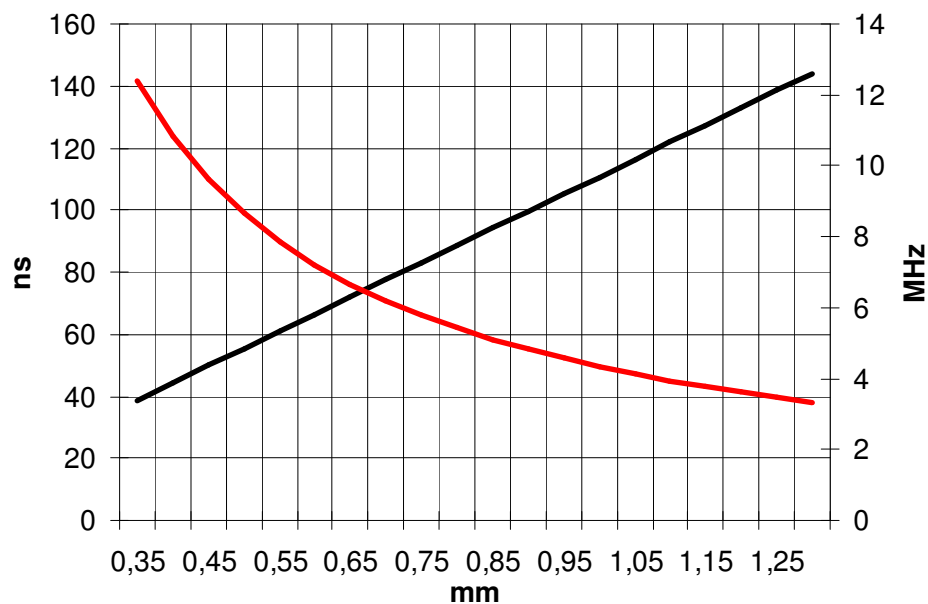
Relative Efficiency versus RF power



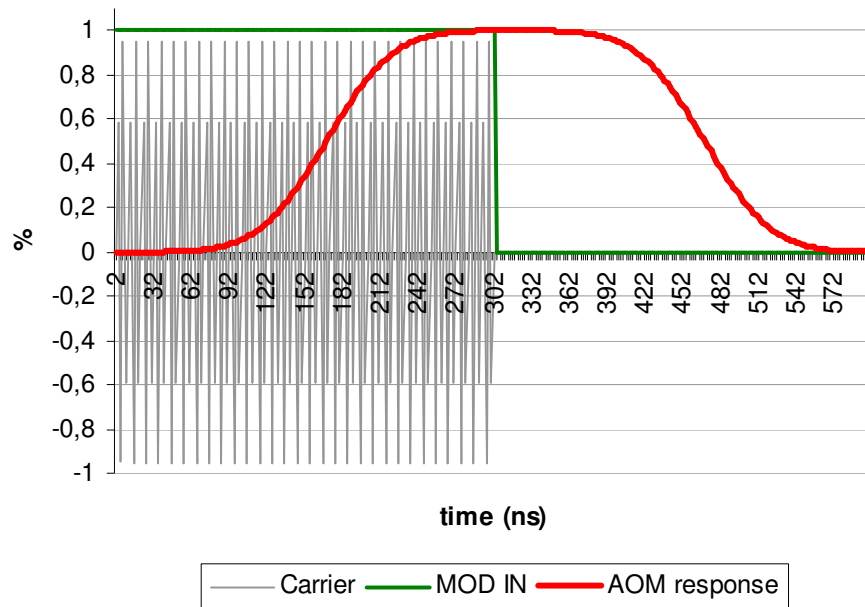
AO relative Efficiency vs driver MOD IN



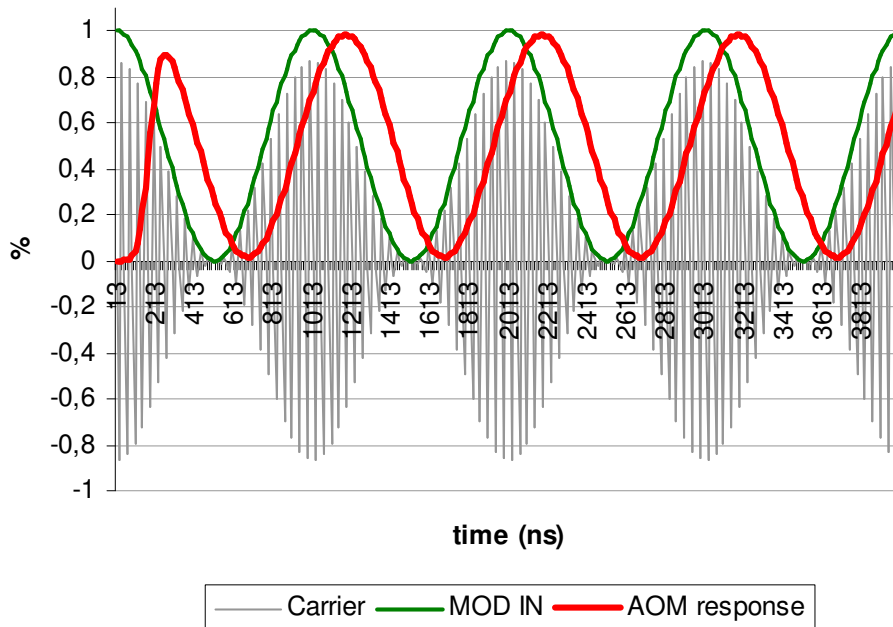
Rise Time (black) / Analog Modulation BW (-3dB) vs Beam diameter



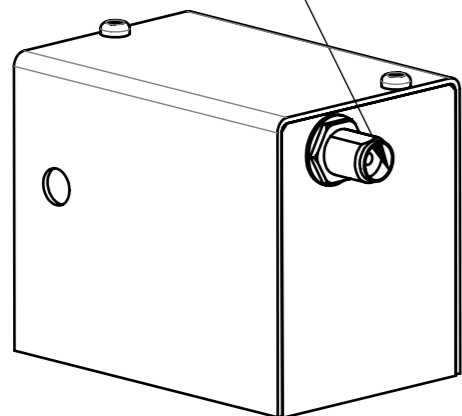
Relative Efficiency / AOM temporal response



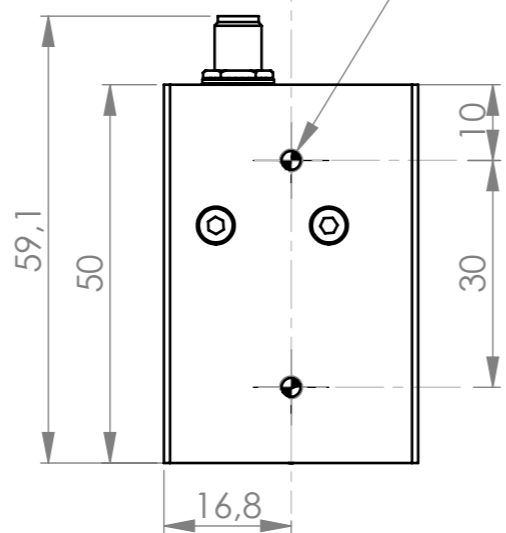
Relative Efficiency / AOM temporal response (1MHz)



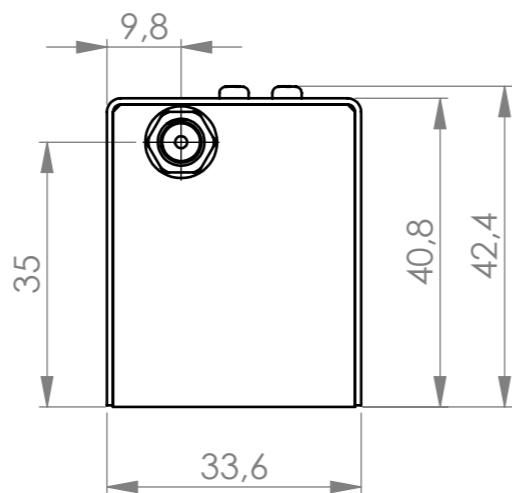
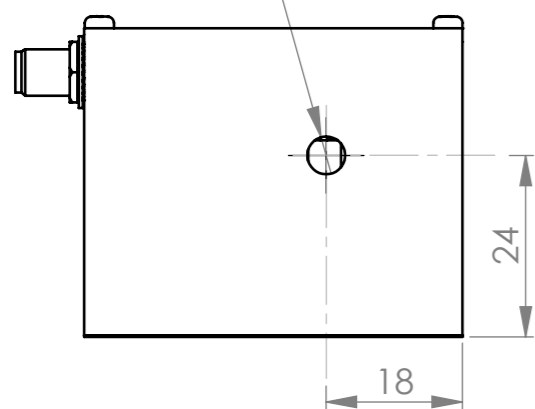
SMA Connector



2 fixation Holes M3
Depth 5mm Maxi



Ø5
Output Optical Axis



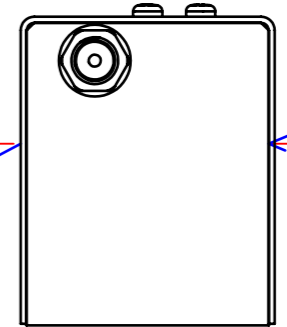
Incident beam
Frequency (f)
Wavelength (λ)

$$\Theta_b = \lambda F / 2v$$

"0" order beam
Frequency (f)

$$\lambda F / v$$

"+1" order beam
Frequency (f+F)

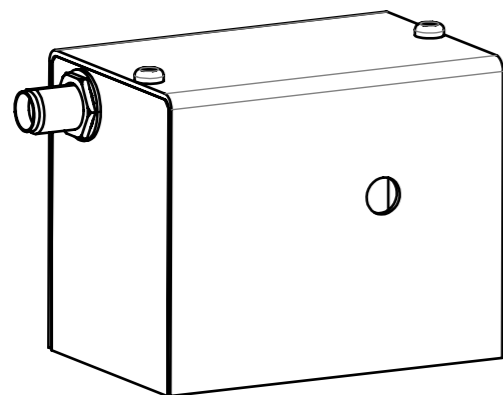
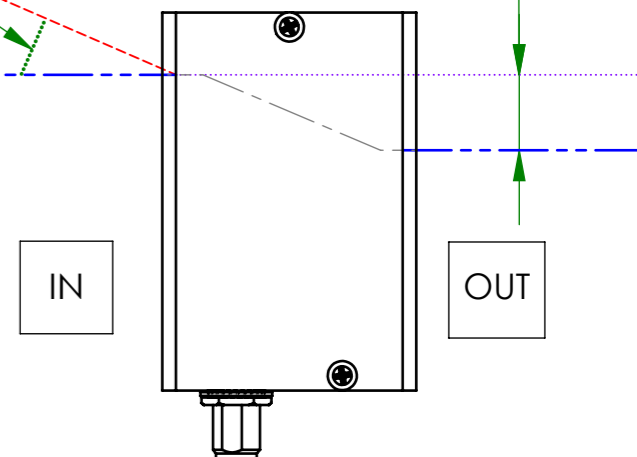
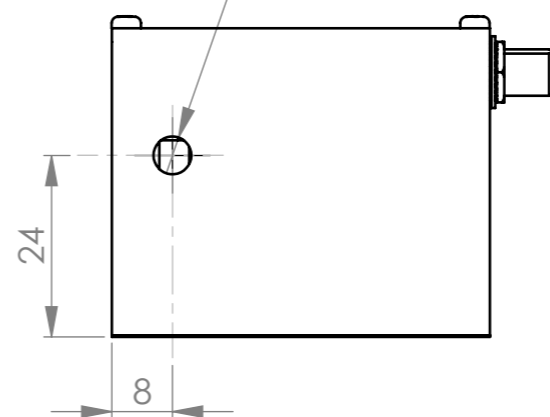


Brewster incidence
approx perpendicular
referred to housing

Optical translation
in the modulator path: 10mm⁺¹₋₁

Normal to optical incidence

Ø5
Input Optical Axis



| Indice / Index | Date | Auteur / Author | Modifications | |
|----------------|----------|-----------------|--------------------------------|--|
| C | 26/07/11 | G.M | Ajout axe optique. | |
| B | 29/01/07 | E.D | Mise en page | |
| A | 14/01/05 | O.G | Plan initial / Initial Drawing | |

| | | | |
|-------------------------|------------|--|---|
| Conception / Design | E.D | PLAN D'INTERFACE / OUTLINE DRAWING Référence / Reference IN-PRO-082 | A.A. SA OPTO-ELECTRONIC DIVISION 18, rue Nicolas Appert F-91898 ORSAY tel : 08 11 09 76 76 fax : 01 76 91 50 31 |
| Vérification / Checking | L.F | | |
| Tolérance / Tolerance | ISO 2768mK | | |
| Echelle / Scale | 1:1 | | |
| Format A3 | | Ce document est la propriété de A.A.S.A. Il est strictement interdit de reproduire ce document ou une partie sans l'autorisation de A.A.S.A. This document is the property of A.A.S.A. It is strictly prohibited to reproduce this document or a part without the authorization of A.A.S.A. | Folio / Sheet 1/1 Indice / Index C |